SKIN ALLERGIES (ATOPIC DERMATITIS) AND MODERN PHYTOTHERAPY

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What is it?

Atopic dermatitis is an inflammation of the skin, characterized by intense itchiness and dryness of the skin. A rash, flaking and lichenization of the skin are the common characteristics of subjects affected by this disease. The diagnosis is essentially clinical. It is a chronic condition which frequently becomes acute to the extent that we can distinguish between acute and chronic phases. The eczematous lesions, almost always very itchy, vary in appearance according to the phase as they can take on forms where the collection of fluid (vesicles) is predominant or those where thickening of the skin (lichenization) is more marked. Swelling and frequent lesions from scratching (which also become marked characteristics) are extremely frequent.

In actual fact, the term “atopic” is not completely suitable to fully describe the disease: whilst it is frequently associated with other allergies (allergic rhinitis and asthma in the first place), 20% of subjects are not atopic in the common sense of the term that they are positive to a prick test for common environmental allergens. The fundamental characteristic that differentiates the disease from other eczemas is intense itchiness. Atopic dermatitis is commonly classified according to the age of the subject in the infantile phase, the paediatric phase and in adulthood. Although typical in the majority of cases, this classification is not rigid. The symptoms may clear up spontaneously with growth or, vice versa, they may appear in adulthood.

The infantile phase generally starts shortly after birth and lasts until the age of two. It begins with dermatitis of the cheeks, forehead and scalp, and the extensor surfaces of the arms. The form with vesicles, crusts and swelling predominates and becomes acute at every sign of discomfort, from the appearance of teeth to the sensation of hunger.

The paediatric phase lasts from the age of two to puberty: the vesicles are less visible whilst papules and the lichenization of the skin due to continuous scratching predominate. The lesions are above all on the flexor surfaces in the area around the elbows and in the popliteal space, on the wrist and on the hips.

The adult phase is characterized by dry skin, with plaques of lichenization which, in addition to the flexor areas, concerns the back and the arms.

Atopic dermatitis can therefore affect all age groups. although it is commonest in the child under five. Atopic dermatitis is undoubtedly the commonest skin disease in children: it affects about 15-20% of all children in Europe: remission at the age of 15 can be seen in 60-70% of cases. Adults represent about 1/3 of cases. This incidence is much higher than that recorded some decades ago.
and generally reflects the process of industrialization of our society, as it is more frequent in urban areas, favouring the hypothesis that environmental factors play an important role. Atopic dermatitis often has a marked effect on the quality of the life of the person suffering from it and their families: uncontrollable itchiness, the resulting lesions from scratching, pain and the loss of sleep end up by affecting the social life of the subject.

The causes

Atopic dermatitis is by definition a multi-factor disease in the etiology of which genetic factors are combined with environmental factors. The key passage however seems to be a destruction of the skin’s barrier function associated with an immunity deregulation.

It has been associated with a mutation of genes which are crucial for the normal differentiation of the epidermal cells but also with the genes that regulate the immunity system. For example, the disease is associated with areas of the genome which codify the cytokines and the receptors involved in the immunity response mediated by Th2 cells. Genetic predisposition is supported by the family nature of the disease and from studies that show an incidence of 85% in homozygotic twins against an incidence of 21% in dizygotic twins.

Whatever the cause, the failure of the epidermal barrier function allows greater exposure and sensitization to antigens. The role of environmental factors is supported by the greater incidence of the disease in urban areas and the increase of the disease in the past 30 years: for example, children living in the rural areas of Jamaica have an incidence of 5.6% of those who live in London. This distinction disappears when the families migrate to London. The disease is more common in the more affluent social classes: it has been hypothesized that this coincides with a greater exposure to indoor antigens.

The diagnosis

The most important characteristics for a diagnosis of atopic dermatitis are:

1) The presence of other signs of atopic predisposition: allergic rhinitis, asthma and/or the age below five
2) The presence of itchiness, which represents its main characteristic; practically all patients with atopic dermatitis complain of itchiness
3) The presence of dry skin (or xerosis)
4) The areas of the body affected: in infancy cheeks, forehead, scalp and arms, in childhood the bending areas of the arms and legs.

The other characteristics of the disease, such as rash, flaking, swelling and vesicles, are typical of the acute phases of the disease.

The classic therapeutic outlines

To illustrate the different therapeutic options, we can distinguish in the first place the acute manifestations from the chronic ones. In a subject with occasional acute episodes, a non-medical
treatment with emollients, alternated with the use of topical corticosteroids to control the acute phases, is generally sufficient. The use of topical emollients is mainly recommended to control the dryness of the skin in almost all patients. In a few cases, it is sufficient to control the symptoms. Dry skin is an important component of atopic dermatitis but apart from a certain relief and an aesthetic effect on the “dryness” of the skin, the emollients do not appear to be able to control the symptomatology of atopic dermatitis. Their use is now consolidated in atopic subjects, but there is no real corresponding scientific that this use contributes to avoiding or delaying the relapse of the disease.

Topical corticosteroids are anti-inflammatory substances that reduce itchiness: intermittent use is often sufficient to control symptoms during relapses. Generally, the use of the lowest dosage of the type of cortisone with the lowest strength (such as hydrocortisone and desonoside) is preferred to reduce to a minimum the risk of side effects. Children in particular have a higher ratio between body surface and body weight than adults: it is therefore necessary to give them a higher dosage, in relationship to their weight than to adults, increasing the risk of side effects. The use of corticosteroids can become continuous when the pathology becomes chronic. In the event that the disease cannot be controlled by the sole use of corticosteroids, topical inhibitors of calcineurin, a protein that is indispensable for the replication of the T lymphocytes (pimecrolimus and tacrolimus) can be associated with these. Due to a rare association between these drugs and the onset of malignant neoplasias, the US FDA advises against their use for prolonged periods of time and suggests avoiding exposing areas, such as the face, to the sun’s rays. An alternative to the use of these substances, in the event that treatment with low strength corticosteroids is unsuccessful, is the use of high strength corticosteroids (betamethasone and desoximetasone). Lastly, if these are also unsuccessful, treatment with ultra-violet (UVA) rays can be attempted and, if necessary, with systemic immunodepressors (methotrexate and azathioprine).

Phytotherapy and atopic dermatitis

Atopic dermatitis is often difficult to control without recourse, whether occasional or continuous, to corticosteroids. Considering the risk of side effects linked to the use of these drugs, it is understandable that the public seek alternative treatments that allow controlling the disease without using corticosteroids. Numerous products exist but their effect is anything but satisfactory and in the end their results do not differ greatly from those of simple emollients. The substances normally used in phytotherapy for atopic dermatitis can be divided into three large groups:

- Active ingredients with an anti-inflammatory actions such as calendula, camomile, althea, etc.
- Oils containing essential fatty acids of the Omega-3 type, especially of plant origin
- Substances with an action similar to hydrocortisone: mainly extracted from liquorice and glycyrrhetinic acid.
The use of plants with an anti-inflammatory action, useful in other problems of the skin, is in general of little efficacy in allergic forms such as atopies (Boneberger et al 2010): this starts from the presupposition that itchiness and the other symptoms of a dermatitis derive essentially from an inflammatory reaction. In atopic dermatitis, the opposite is often true. Itchiness often precedes the inflammation which is in part a consequence of the intolerable impulse to scratch continuously. Plant oils containing Omega-3 (Oil of Evening Primrose, Oil of Borage; Oil of Ribes nigrum, rich mainly in linolenic acid) have an action which is partly due to their anti-inflammatory effect and partly to their anti-oxidant action. The clinical studies available refer nevertheless to their use in the diet rather than to topical use and are rather contradictory (Prescott and Calder 2004). The extracts of liquorice (Glycyrrhiza glabra) contain as the active ingredient glycyrrhetinic acid. This inhibits the enzyme 11-beta-hydroxysteroid dehydrogenase, which in the skin converts the hormone hydrocortisone into biologically inactive cortisone. The result is an anti-inflammatory action linked to the accumulation of hydrocortisone: its anti-inflammatory action is however less than that of the application of cortisone, although with fewer side effects. The result in many atopic dermatitises is only partial (Abrahmovic and Perlmutter 2006).

Towards a new frontier

Atopshield is a medical device which applies the barrier effect common to other products. This is a protective action which keeps the skin hydrated and at the same time avoids contact with sensitizing substances. The real innovation of Atopshield however, is a new ingredient and a new method of action: it is a medicinal plant that has always been used after insect bites in the Amazon region to relieve the sensation of itchiness. In Atopshield, the barrier effect instead of being associated with substances of the emollient of anti-inflammatory type, is associated with a specific action in itchiness. As itchiness is the main symptom in atopic dermatitis which often precedes the inflammatory situation (rash, swelling and vesicles) or is even due to the continuous scratching which is at the origin of lesions and irritation, Atopshield is definitely more efficacious and faster-acting than other products on the market. It has an emollient action which, by controlling itchiness, can delay or avoid recourse to corticosteroids, putting it in an intermediate position between common emollients and recourse to topical drugs based on corticosteroids. Precisely due to this characteristic of avoiding relapses of minor or medium atopic dermatitis, Atopshield plays an important role in the perspective of being able to control the symptomatology safely and effectively for long periods of time.
Atopshield has been tested in a clinical study of a group of subjects affected by Atopic Dermatitis aged between 5 and 22. The subjects applied Atopshield 4 times a day for two weeks. All reported immediate improvement in itchiness: the subjects were evaluated according to the SCORAD system and the barrier function of the stratum corneum was studied through TEWL (Tewameter TM210)
Results of the evaluation with SCORAD on 12 subjects affected by atopic dermatitis and treated with Atopshield four times a day.

**Bibliography**

